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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,040	09/21/2005	Catherine Hedouin	1022702-000261	7039

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BUCHANAN, INGERSOLL & ROONEY PC  
POST OFFICE BOX 1404  
ALEXANDRIA, VA 22313-1404

EXAMINER
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LIAO, DIANA J

ART UNIT	PAPER NUMBER
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1793

NOTIFICATION DATE	DELIVERY MODE
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02/19/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com  
offserv@bipc.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/519,040	<b>Applicant(s)</b> HEDOUIN, CATHERINE	
	<b>Examiner</b> DIANA J. LIAO	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 17-34 is/are pending in the application.
- 4a) Of the above claim(s) 25-29 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-24, 30 and 32-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/9/2009</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/9/2009 has been entered.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 11/9/2009 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 17-24, 30 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aubert, et al. (US 6,214,306).

Aubert '306 teaches a zirconium oxide based composition comprising cerium oxide and at least one dopant. The composition comprises a single phase in a cubic or quadratic system. After calcination at 900°C for 6 hours the surface area is at least 50 m<sup>2</sup>/g and at 1000°C the surface area is at least 30 m<sup>2</sup>/g. (claim 73) The dopant comprises a rare-earth metal or a mixture containing a rare earth metal. (claim 74) Particular mention is made of lanthanum, neodymium and praseodymium. (col 2, lines 52-57) The composition can have a surface area of at least 60 m<sup>2</sup>/g after calcination for 6 hours at 1000°C. (claim 41) The composition has a Zr/Ce ratio of greater than 1 with at least 51% zirconium oxide. (claim 45) The doping element is preferably 0.1 to 20% and most preferably between 1 and 10% of the weight of the composition in oxide form. (col 3, lines 33-38) This composition may be a part of a catalytic system. (claim 51)

Regarding sulfur content, Aubert '306 teaches preferred zirconium and cerium salts to be nitrates (claim 79) and no potential sources of sulfur are taught in the reference. Thus it is inherent that the resulting composition would not contain sulfur. Sulfur would be an impurity, and it would be obvious to one of ordinary skill in the art to achieve as pure a product as possible.

Regarding the weight percentages of the oxides and containing more than one rare earth metal, Aubert '306 teaches similar ranges for the zirconium and cerium oxides. The total oxide weight percentage for the dopant overlaps with that of the claimed ranges for lanthanum and other rare earth oxide. An example composition in Aubert '306 contains an oxide composition of 72% zirconium, 18% cerium, and 5% each of lanthanum and praseodymium. This composition meets the limitation of a zirconium cerium oxide in solid solution containing both lanthanum oxide and an oxide of another rare earth. It would have been obvious to optimize the ranges to create a product of a high surface area at a high temperature, as is desirable in the art. (col 1, lines 22-25)

Regarding the use of neodymium oxide, Aubert '306 generally teaches the use of other rare earths and thus neodymium is an obvious alternative to any other rare earth oxide used. Neodymium is also specifically listed as a rare earth of note for use as a dopant. Thus it would have been obvious to use neodymium oxide in the composition to increase stability at high temperatures.

Regarding the surface area of the composition, Aubert '306 is silent regarding the surface area after calcination for 6 hours at 1150°C. However, Aubert '306 teaches generally high surface areas at 900°C and 1000°C, including of at least 60 m<sup>2</sup>/g after calcination at 1000°C. Since a similar composition has been found also with very similar properties, it is found that the claimed surface area ranges overlap significantly with the ranges of Aubert '306. The surface areas of Aubert '306 are very high and there is no clear showing that the products taught in Aubert '306 or products readily envisioned and optimized in Aubert '306 would *not* have the claimed surface areas at

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1150°C or 1200°C. Thus, the high surface areas are either found to be inherent in the products of Aubert '306 or they would have been obvious to one of ordinary skill in the art to create through optimization of dopants.

### ***Response to Arguments***

6. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Declaration filed on 11/9/09 has also been considered but is moot in view of the new grounds of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIANA J. LIAO whose telephone number is (571)270-3592. The examiner can normally be reached on Monday - Friday 9:00am to 6:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngoc-Yen M. Nguyen/  
Primary Examiner, Art Unit 1793

DJL